



Flood Control District of Maricopa County

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If this brochure was mailed to you, chances are your property is in a flood hazard zone and you are required to carry flood insurance. This brochure is designed to provide you with general information to get you started in your flood protection measures.

**DO NOT ENTER
FLOODED WASHES**

FLOOD SAFETY TIPS

**WHEN FLOODS
ARE NEAR,
STEER CLEAR**

FLASH FLOODS can happen without warning. If you hear a rumbling sound, if animals are running away from where you are, you feel the ground shaking, or you hear a **FLASH FLOOD WARNING** broadcast on radio or TV, climb to higher ground immediately. Leave your car, camping equipment or other belongings where they are. You may have only minutes to escape.

For Flood Watch/Warnings and Flash Flood Watch/Warnings listen to local stations (TV or radio) or the local NOAA Weather Radio in Phoenix area KEC 94 at 162.550

Desert Flooding

FACT OR FICTION?

Newcomers to the area are often surprised to learn that the desert holds immense potential for major flooding. Often, normally dry rivers, washes and channels become raging torrents in minutes.

Floods are the most common natural disaster in the United States. They've caused nearly \$24 billion in U.S. flood losses in the last 10 years. Just because you haven't experienced a flood in the past, doesn't mean you won't in the future. Flood risk isn't just based on history; it's also based on a number of factors: rainfall, river-flow, topography, flood-control measures, and changes due to building and development.

The Flood Control District of Maricopa County was founded by the Maricopa County Board of Supervisors in 1959 in response to significant flooding events that plagued Maricopa County during its early history. The activities of the Flood Control District are funded primarily by a flood control tax levy assessed on real property within Maricopa County and cost-sharing agreements with federal, state, county, and local governments.

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Interactive Locator Map



Click [here](#) to view an interactive map and zoom in on any area in the county to see structures, projects and studies.

- [Map Instructions](#)

To access information on projects, structures, and studies use the Flood Control District's "Interactive Map" by going to the "**Projects & Structures**" District web page at www.fcd.maricopa.gov/Projects/PPM/projStruct.aspx



FLOODING HISTORY MAJOR EVENTS

1891 - The maximum flood of record for Maricopa County occurs on the Verde, Salt and Gila rivers. The Salt River expands to nearly three miles wide in the Phoenix area. The railroad bridge between Tempe and Phoenix is destroyed, leaving Phoenix without a rail connection for three months.



1927 Water flows over the apron of Gillespie Dam. The Agua Fria River washes out sections of the bridge at Coldwater. Two bridge spans over the Hassayampa are washed away near Arlington.

1954 The most severe storm since 1891 occurs in the Queen Creek area. Gilbert and Apache Junction are severely flooded. Damage estimated at \$446,000 for property and \$1.4 million for agriculture.

1965 to 1966 Heavy winter rains cause the first large flow of the Salt River through Phoenix since the construction of the Verde River dams. All roads crossing the Salt River in Tempe, Phoenix, Scottsdale, and Mesa are washed out. Damage estimated at \$10 million.

1977 to 1980 Seven regional floods occur and Phoenix is declared a disaster area three times. There are eighteen fatalities and approximately \$310 million in property damage.



1997 Storms caused by Hurricane Nora, lead to flash flooding in portions of northwestern Maricopa County. Two earthen dams give way in Aguila, causing widespread flooding.

2000 There is considerable flooding in both rural and urban areas such as Peoria, Youngtown and Surprise. The Department of Transportation estimates the damage to roads and bridges alone at \$1 million. State Route 93 is closed north of Wickenburg due to high water. Sols Wash overflows and floods Coffinger Park and nearby homes. Floodwaters cause considerable damage to agriculture in northwestern Maricopa County.

2008 The first major monsoon storm of the season drops more rain in a 12-hour period than during the entire 2007 monsoon season. Phoenix Sky Harbor International Airport runways are shut down for a short period and rising water forces the closure of Interstate 17 near downtown Phoenix.

For more information on the history of flooding in Maricopa County go to the Flood Control District website at www.fcd.maricopa.gov/Education/history.aspx

FLOOD SAFETY/EMERGENCIES



Water

Water quickly becomes a precious resource following many disasters. Keep extra on hand. Make sure all household members know where and how to shut off the water at the main house valve.

Electricity

Locate your electricity circuit box and teach all responsible household members how to shut off the electricity to the entire house.

Money

Keep a small amount of cash or traveler's checks at home in a safe place.

Special Needs

If you or someone close to you has a disability or a special need, you may have to take additional steps to protect yourself and your family in an emergency. Special needs may include hearing impaired, mobility impaired, single working parent, non-English speaking, non-vehicle and special dietary needs.

Important Documents

Store documents such as insurance policies, deeds, property records and other important papers in a safe place.

Prepare a safety kit with drinking water, a first-aid kit, canned food, a radio, dry clothing, special medication, flashlight and blankets. See emergency kit preparation at the FEMA website at

www.fema.gov/plan/prepare/supplykit.

Know safe routes from home, work and school that are on higher ground. Your family may not be together when disaster strikes, so plan how you will contact one another. Think about how you will communicate in different situations. Establish "where to meet locations."

Natural Gas

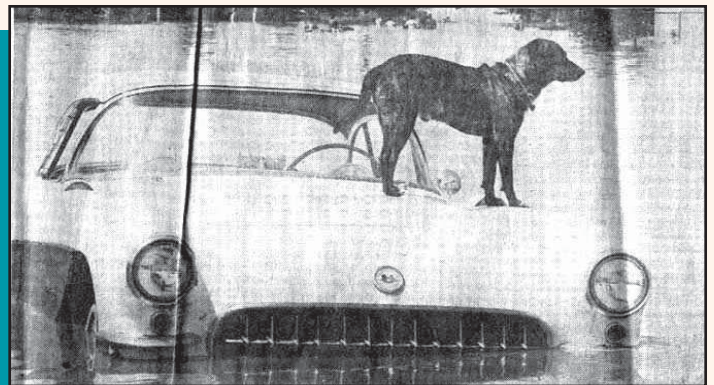
Know where and how to shut off the natural gas valve. **CAUTION** - If you turn off the gas for any reason, a qualified professional must turn it back on. **NEVER** attempt to turn the gas back on yourself.

Driving Flood Facts

Six inches of water will reach the bottom of most passenger cars causing loss of control and possible stalling. Two feet of rushing water can carry away most vehicles including sport utility vehicles (SUVs) and pickups. If flooding occurs, go to higher ground and avoid areas subject to flooding. Do not attempt to walk across flowing streams or drive through flooded roadways.

Caring for Animals

To prepare a plan for caring for pets and large animals, identify a shelter, gather pet supplies, have pet carrier/leash, and have proper ID for your pet and up-to-date veterinarian records. With the exception of service animals, pets are not typically permitted in emergency shelters.



Phoenix 1963

Never walk across flowing streams or floodwaters if it is above your knee. Never camp in a dry wash or creek bed. Keep children away from floodwaters, ditches, culverts, and storm drains. If your vehicle stalls in water, abandon it immediately and seek higher ground.

FLOOD INSURANCE



Phoenix 1965

Flooding can happen anywhere, but certain areas are especially prone to serious flooding. To help communities understand their risk, flood insurance rate maps, or **FIRMs**, have been created to show the locations of risk areas.

The FIRM will indicate high-risk areas, or Special Flood Hazard Areas (SFHA), with at least a 1% annual chance of flooding, which equates to a 26% chance of flooding over the life of a 30-year mortgage. All homeowners in these areas with mortgages from federally regulated or insured lenders are required to buy flood insurance.

The FIRM will indicate moderate-to-low risk areas, or Non-Special Flood Hazard Areas (NSFHA), where the risk of being flooded is reduced, but not completely removed. These areas are outside the 1% annual flood-risk floodplain areas, so flood insurance isn't required, but it is recommended.

Maricopa County participates in the FEMA sponsored National Flood Insurance Program (NFIP). The NFIP provides federally backed flood insurance to communities that adopt and enforce floodplain regulations.

The NFIP offers another incentive to Maricopa County communities through the Community Rating System (CRS). Under the CRS, flood insurance premiums are lowered for communities that work to reduce flood damage, manage development, and protect structures beyond the minimum requirements of the NFIP.

There are 10 CRS classifications. Currently Maricopa County has a Class 5 rating, which is a 25% discount in flood insurance to property owners within the SFHA.

Homeowner's insurance will not cover flood damage and loss (structure and/or contents). You can purchase flood insurance anytime. Contents coverage is also available and must be purchased as a separate policy. There is a 30-day waiting period after you have applied and paid the premium before the policy is in effect.

Contact a licensed property/casualty insurance agent or broker for flood insurance. For more information consumers can call the NFIP at 1-888-379-9531 or go to www.NFIP.com or www.FloodSmart.gov.



Cave Creek 2010

Depending on the type of coverage and Risk Area, yearly homeowner flood insurance rates range from \$119 - \$2,633 for building and contents; \$319 - \$3,467 for building only; and \$136 - \$2,253 for contents only. Flood insurance coverage is also available for renters and commercial properties. For more information go to the FEMA FloodSmart website at www.floodsmart.gov/floodsmart.

NATURAL & BENEFICIAL FUNCTIONS

Floodplains are crucial for maintaining natural flood and erosion control. Part of the District's mission is to plan and design flood control facilities as "places for people." These projects, such as Indian Bend Wash, Tempe Town Lake, and Bethany Home Outfall Channel, contribute to local communities and provide open space opportunities year round.

The development and implementation of watercourse master plans help to manage and restore major river corridors. The District works with governmental agencies, cities, and private non-profit corporations to provide habitat restoration, groundwater recharge, and recreational trails and parks. Some of these projects are the 5-mile Rio Salado project located on the Salt River, 14-mile Va Shly'ay Akimel project on the Salt River, and the 18-mile El Rio project on the Gila River.



Floodplain benefits include the following:

Natural Flood and Erosion Control

Provides flood storage and conveyance, reduces flood velocity, and controls erosion.

Water Quality

Filters nutrients and impurities from runoff for drinking, wildlife and recreation.

Groundwater Recharge

Reduces frequency and duration of surface flows.

Biological Resources

Supports high rate of plant growth, provides breeding and feeding grounds for wildlife, and enhances waterfowl habitat.

Social Resources

Provides open space and aesthetic pleasure, and allows for scientific study and environmental research.

PROPERTY PROTECTION

Floodproofing a structure means altering it so floodwater will not cause damage. This can be done when building and after building, referred to as "retrofitting." Any building and/or retrofitting must meet the legal requirement of your community, including the floodplain management process. There are various methods to consider as you think about how to protect your structure from flooding.

Elevation raises your structure and elevate systems.

Floodwalls are walls around your structure.

Wet Floodproofing makes uninhabited portions of your structure resistant to flood damage and allows water to enter during flooding.

Dry Floodproofing seals your structure to prevent floodwaters from entering.

Demolition tears down structure to either rebuild properly.

Relocation moves your structure out of the floodplain.

Clearing and Maintenance clears obstructions from systems (pipes, culverts, washes) that carry runoff on or near your property.

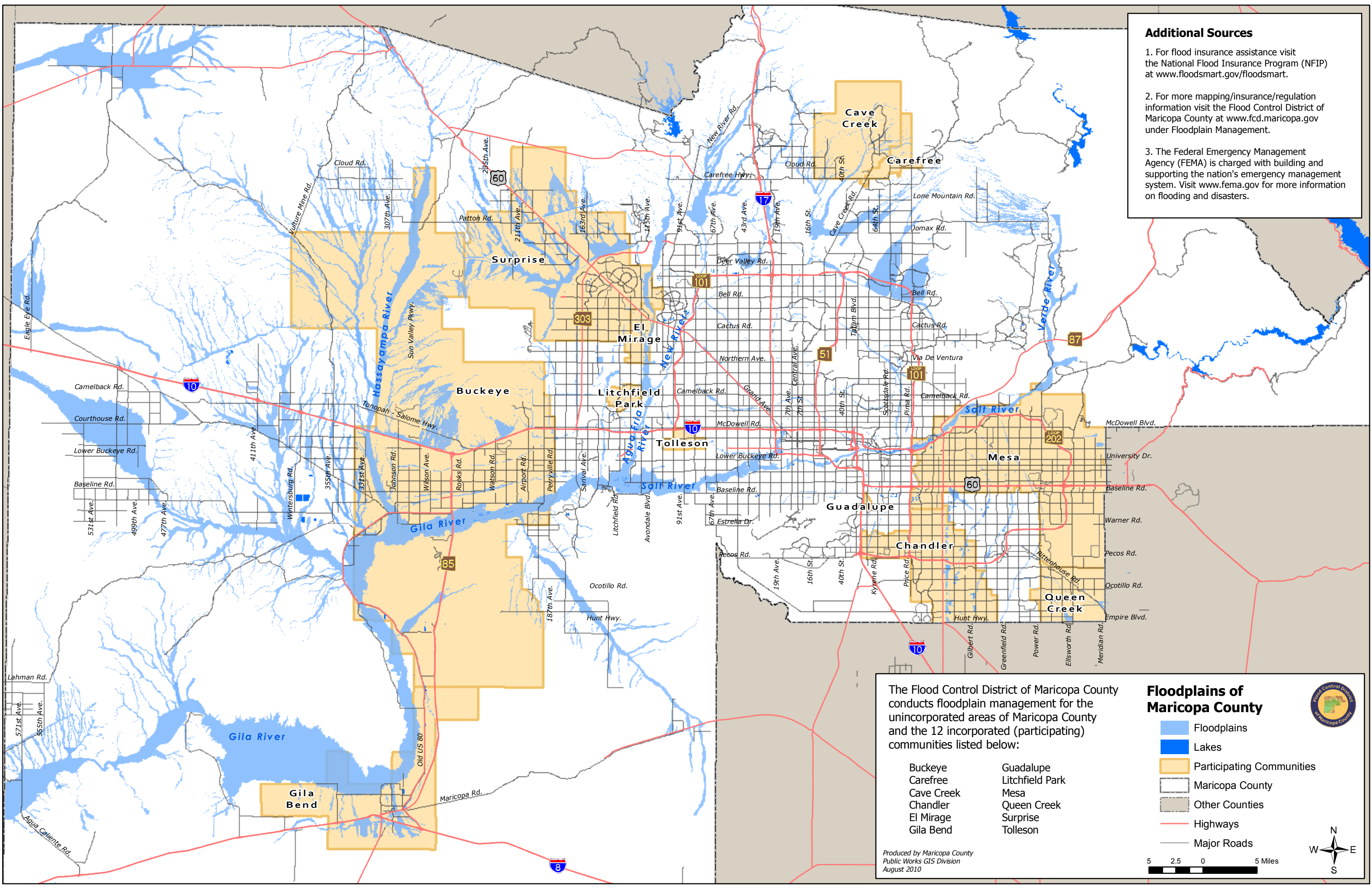


Wickenburg 2000

To protect yourself and your home you should avoid building in a floodprone area unless you elevate and reinforce your home, electrical system components and HVAC equipment. Install "check valves" in sewer traps to prevent floodwater from backing up into the drains your home. Anchor fuel and propane tanks. Construct natural barriers by grading correctly to improve drainage. Clear debris from gutters and downspouts. **If water rises in your home before you can evacuate go to the top floor, attic, or roof. Furniture, animals, and other valuables may be moved to these higher levels if possible.**

Additional Sources

- 1. For flood insurance assistance visit the National Flood Insurance Program (NFIP) at www.floodsmart.gov/floodsmart.
- 2. For more mapping/insurance/regulation information visit the Flood Control District of Maricopa County at www.fcd.maricopa.gov under Floodplain Management.
- 3. The Federal Emergency Management Agency (FEMA) is charged with building and supporting the nation's emergency management system. Visit www.fema.gov for more information on flooding and disasters.



The Flood Control District of Maricopa County conducts floodplain management for the unincorporated areas of Maricopa County and the 12 incorporated (participating) communities listed below:

- | | |
|------------|-----------------|
| Buckeye | Guadalupe |
| Carefree | Litchfield Park |
| Cave Creek | Mesa |
| Chandler | Queen Creek |
| El Mirage | Surprise |
| Gila Bend | Tolleson |

Floodplains of Maricopa County

- Floodplains
- Lakes
- Participating Communities
- Maricopa County
- Other Counties
- Highways
- Major Roads



Produced by Maricopa County
Public Works GIS Division
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5 2.5 0 5 Miles



FLOOD WARNING SYSTEM

Flood warnings and watches are issued by the **National Weather Service (NWS)**. Forecasts, advisories, watches, and warnings from the NWS may be obtained 24 hours a day on local radio and television services or their website at www.nws.noaa.gov. Only the NWS can issue official Flood Watches and Flood Warnings to the public

The Flood Control District operates a flood threat recognition system called ALERT (Automated Local Evaluation in Real Time). ALERT data is collected by rainfall and streamflow gages. The District monitors 304 automatic rain gages, 167 automatic stream gages and 33 automatic weather stations throughout Maricopa and neighboring counties that affect our watersheds. District staff is able to relay the gage readings to the NWS, the Maricopa County Department of Emergency Management and local dam operators. These agencies use this information to issue the appropriate warnings.



For **Flood Watch/Warnings and Flash Flood Watch/Warnings** listen to local stations (TV or radio) or the local NOAA Weather Radio in Phoenix area KEC 94 at 162.550. **FLOODING IS POSSIBLE.**

A **Flash Flood Watch** is a statement issued by the National Weather Service that a storm or flood of significant magnitude is likely to occur. **BE PREPARED TO RESPOND AND ACT QUICKLY.**

A **Flash Flood Warning** is a statement issued by the National Weather Service that flash flooding has occurred or is imminent. **EVACUATE AND SEEK HIGHER GROUND IMMEDIATELY.**



While driving, slow down and look ahead for water-filled dips in the road. **Do NOT drive through a flooded stretch of roadway, especially if the water is moving.** If your vehicle stalls in a flooded section of roadway, turn on the emergency flashers, abandon the vehicle and move to higher ground immediately.



You may call the Maricopa County Department of Emergency Management (DEM) at (602) 273-1411 to learn about evacuation routes, emergency shelter locations, and aid for the physically challenged and other emergency information. You may also report flooding or learn where and how to submit a flood damage report.

FLOODPLAIN DEVELOPMENT PERMITS

The Maricopa County Department of Planning and Development is responsible for processing applications for land use approvals, zoning and land use permits, construction and building permits, and engineering and subdivision permits in unincorporated Maricopa County. **Depending on where your property is located, you will follow one of the three permitting scenarios below:**



1. **If your property is located in unincorporated Maricopa County,** visit the Maricopa County Department of Planning and Development One-Stop Permit Shop to start the permitting process. The One-Stop Permit Shop allows the public to receive a copy of the permit application at one time. All the agencies that issue permits receive a copy of the permit application and their comments are compiled into one response. The One-Stop Permit Shop is located at the Department of Planning & Development, 501 N. 44th Street, Suite 200, Phoenix, Arizona 85008; phone (602) 506-3301.
2. **If your property is located in the following communities that manage their own floodplains,** start the permitting process at the community's city hall: (at this time) Avondale, Fountain Hills, Gilbert, Glendale, Goodyear, Paradise Valley, Peoria, Phoenix, Scottsdale, Tempe, Youngtown and Wickenburg. The Flood Control District is not be involved in the permitting process in these communities.
3. **If your property is located in the following communities in which the Flood Control District manages the floodplains,** start the permitting process at the community's hall: (at this time) Buckeye, Carefree, Cave Creek, Chandler, El Mirage, Gila Bend, Guadalupe, Litchfield Park, Mesa, Queen Creek, Surprise and Tolleson. The Flood Control District will be involved in the permitting process if your property is in or near a floodplain in these communities.

The District directly issues permits for the following:

Right-of-Way Permit is issued for the use of, or access through, property owned and maintained by the District.

Floodplain Use Permit is required if you wish to make changes to land within a 100-year flood hazard area, and your property is located in one of the communities listed above in scenario No. 3. A Floodplain Use Permit will have to be obtained before you build or grade, or install any type of walls or fencing.

Sand and Gravel Permit is issued when a sand and gravel operation can prove their facility will not obstruct the natural flow of the watercourse, will not cause damage to adjacent structures or properties, will maintain the continuity of flows and sediment, and will preserve the natural and beneficial function of the watercourse.



For more information on floodplain development permit requirements for construction, retrofitting, rehabilitation, addition or other improvements, contact the Flood Control District Floodplain Management and Services Division at (602) 506-1501 or go online to the District's website at www.fcd.maricopa.gov/Floodplain/floodplain

FLOODPLAIN REGULATIONS

The Flood Control District of Maricopa County Board of Directors has adopted and enforced Floodplain Regulations since February 25, 1974. Procedures are established by which the Floodplain Regulations, the State Flood Control Statutes (Title 48), the Community Rating System (CRS Program) and the National Flood Insurance Program (NFIP) shall be administered and enforced to regulate floodplain development. To review the Floodplain Regulations go to www.fcd.maricopa.gov/Permitting.



The Floodplain Regulations **CONTROL** the alteration of natural floodplains and watercourses; **PREVENT** or regulate construction in Special Flood Hazard Areas which will divert floodwaters or may increase flood hazards in other areas; **PROTECT** the natural and beneficial function of the floodplain, and the life, health, and property of County residents; and **MINIMIZE** expenditure of public money for flood control projects.

These Floodplain Regulations require the property owner to obtain a Floodplain Use Permit for improvements, modifications, reconstruction, repair or additions to existing buildings. Regulation compliance required when improvements, modifications, additions, reconstruction or repairs reach the 50% Substantial Improvement threshold per floodplain regulations.

They allow for development within a watercourse or areas designated by the Floodplain Administrator as a Special Flood Hazard Area (SFHA), with contributing watersheds that have flows greater than 50 cubic feet per second (cfs) during a 100-year flood event.

VIOLATIONS

A **floodplain violation** is an unauthorized structure, fill or other development within a delineated floodplain. Once you have reported a possible violation, inspectors will review and inspect the area. If a violation has occurred, the property owner in question will be formally notified and requested to take corrective action. Civil court action has been required in some instances.

To report a floodplain violation, please call the District at (602) 506-2419 and request to speak with the Code Enforcement Division. Anyone making a complaint may do so anonymously.



LOCAL FLOOD HAZARDS



Determining the Risk

To identify a community's flood risk, the Federal Emergency Management Agency (FEMA) conducts a Flood Insurance Study. The study includes statistical

data for river flow, storm tides, hydrologic/hydraulic analyses, and rainfall and topographic surveys. FEMA uses this data to create the flood Insurance Rate Maps that outline your community's different flood risk areas.

Flood Insurance Rate Maps (FIRMs)

The changing weather patterns, erosion, and development can affect floodplain boundaries. FEMA updates the FIRMs and these digital flood hazard maps provide an official depiction.

To help you make informed decisions about protecting your property, both financially and structurally, see the **FEMA map website** at www.floodsmart.gov/floodsmart or the **Flood Control District of Maricopa County website** www.fcd.maricopa.gov.

DRAINAGE SYSTEM MAINTENANCE

The **Maricopa County Board of Supervisors** revised Drainage Regulations that have been adopted and enforced since September 2004. The Maricopa County Planning & Development Department is responsible for administering and enforcing Drainage Regulations for the residents of unincorporated Maricopa County. For more information go to the website at www.maricopa.gov/planning.

Regulations apply to all development of land conditions that may affect drainage systems and patterns. The regulation defines a drainage system as any system or feature over which stormwaters flow and development as any manmade change to the property. This regulation also has the definition of drainage as runoff which flows over land as a result of precipitation. This definition includes sheet flow and flows which may be concentrated, with or without a defined channel.

Stormwater runoff can travel through gutters; storm drains, local channels, private easements, and washes before entering the floodplain. The Drainage Regulations reduce existing and potential flooding caused by stormwater so as not to increase water runoff, divert flows or back water onto properties. To request drainage reviews call 602-506-3301 or go to: www.maricopa.gov/planning/BuildingServices/DrainageReviewRequest.



Maintenance of these systems is important because trash/debris can obstruct the flow of water, which can cause overflow on to roads and properties. If you see dumping or trash/debris in ditches, gutters, storm drains, local channels, private easements, and washes, and fill or construction near in the floodplain or property lot lines in unincorporated Maricopa County contact Planning and Development Code Violation & Complaints at **602-506-3301** or go to: www.maricopa.gov/planning/OnlineServices.